Operations and Modeling Breakout
Feedback

Facilitators

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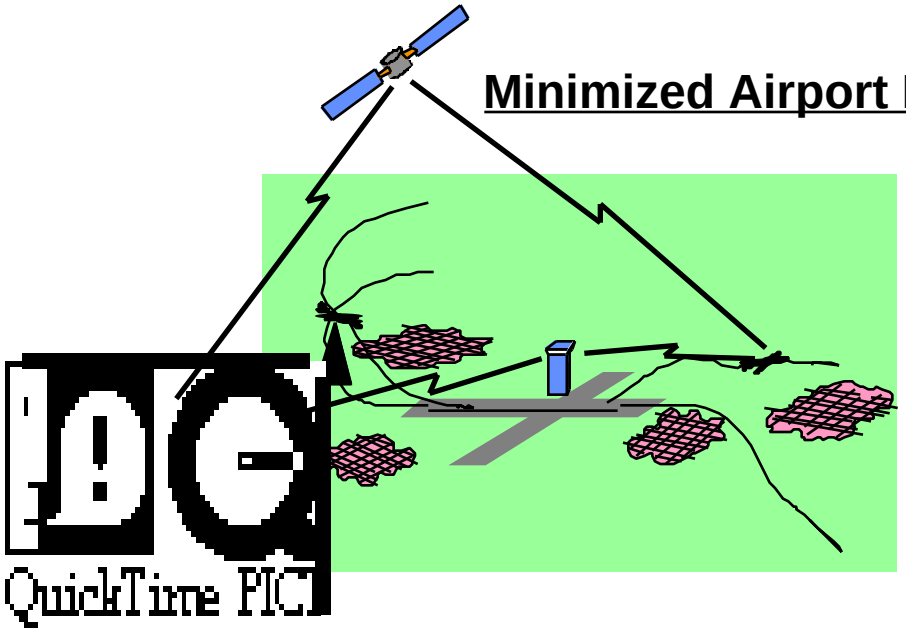
Airspace Operations Noise Reduction DRAFT

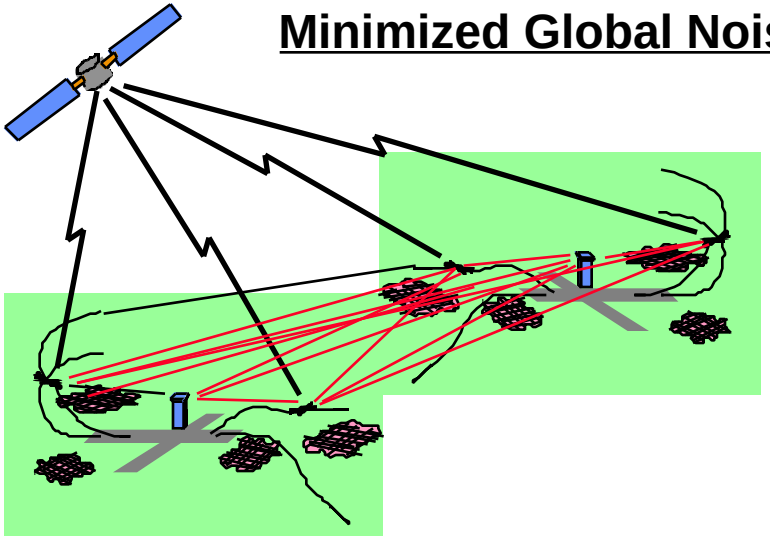
Minimized Airport Noise Impact



Enabling Technologies

- Impact minimal flight procedures
- Global impact minimization
- ...

Minimized Global Noise Impact



Airspace Operations Noise Reduction Needs

- Understanding variability in operating procedures
- Future airspace system operational needs
- Integration with safety, capacity and emissions
- Community education and interaction
- Integration of new procedures with users and providers
- Development of operations to capitalize on lower noise capabilities
- Improve effectiveness of existing mitigation procedures

Airspace Operations Noise Reduction Concepts

- Airspace design/redesign for noise
- Automated ground movements and planning to increase capacity → fewer airports and less exposure
- Design of airports for noise minimum operations
- Alternative approach and departure profiles
- Compression of operations into narrow time windows
- Onboard acoustic sensors coupled to FMS
- Energy absorbing runways to eliminate reverse thrust noise
- New technology for noise reduction, e.g., maglev

Airspace Operations Noise Reduction
2007 Roadmap

- **Improved effectiveness of existing mitigation procedures**
- **Airport and airspace design for noise mitigation**
- **Evaluation and integration of alternative approach and departure procedures in high capacity environments**

Airspace Operations Noise Reduction
2017 Roadmap

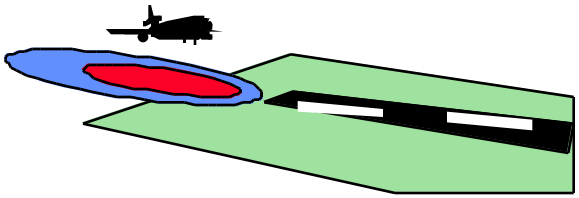
- **Real time noise management (sensors coupled to FMS/ATC)**
- **Compression of operations**
- **New technology ground ops systems (variable friction runways, maglev sleds, etc.)**
- **Reduction or elimination of human factor barriers to automation**

Modeling and Integration

DRAFT

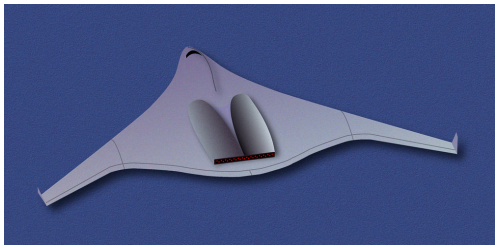
Concepts

Real-time Noise Exposure



Global Noise Impact

Systems Noise Prediction



Enabling Technologies

- Noise effects
- Airport noise modeling
- Global impact modeling
- ...

Modeling, Integration and Effects
Needs

- **Continued refinement of INM (weather, long distance propagation, sideline attenuation, realistic operations)**
- **Integration of INM with ground-based noise models**
- **Real time, automated noise modeling**
- **Improvements in components of systems noise prediction model**
- **Quantification of effects of low frequency noise from ground level operations.**
- **Significance of changes in noise exposure**
- **Quantification of response to noise events near threshold**
- **Validation of exposure-response corrections in Appendix D of the Levels Document**

Modeling, Integration and Effects
Concepts

- **Real time noise modeling**
- **Regional noise modeling (improvements in NIRS)**
- **Free flight noise modeling**
- **Systems analysis tool for mitigating noise and emissions**
- **Soft computing methods**

Modeling, Integration and Effects
2007 Roadmap

- **Integrated Noise Model improvements, extensions and validations**
- **Systems noise prediction component model improvements**
- **Effects of near threshold and low frequency ground level operation noise events**

Modeling, Integration and Effects
2017 Roadmap

- **Real time noise model development**
- **Global/regional noise model development**
- **Effects of revolutionary aircraft on community noise impact**